County of Los Angeles
INTERNAL SERVICES DEPARTMENT
1100 North Eastern Avenue
Los Angeles, California 90063

JIM JONES
Director

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"To enrich lives through effective and caring service"

December 30, 2015

To: Supervisor Hilda L. Solis, Chair
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe
Supervisor Michael D. Antonovich

From: Dave Chittenden
Chief Deputy Director

Subject: **BOARD MOTION OF SEPTEMBER 8, 2015, ITEM 3 - DIRECT COUNTY SUSTAINABILITY COUNCIL TO PROVIDE AN ANALYSIS OF CREATING A CENTRALIZED COUNTYWIDE VEHICLE FUELS PROCUREMENT AND FUELS MANAGEMENT PROGRAM**

On September 8, 2015 your Board directed the County Sustainability Council (CSC) to submit a report to the Board in 45 days that includes an analysis of creating a centralized Countywide Vehicle Fuels Procurement and Fuel Management Program within the Internal Services Department (ISD), including the County's emergency and non-emergency vehicle fleets managed by ISD, the Director of Public Works, the Sheriff and the Fire District and should assess the following:

- Centralizing the procurement and contract management of vehicle fuels within ISD on an ongoing basis.
- Developing standardized and regular reporting of total vehicle fuel usage, fuel spending, and commodities pricing.
- Providing price risk management strategies that protect the County and Departments from market pricing volatility, which should include input from the Treasurer and Tax Collector (TTC) and the Auditor-Controller (A-C).
- Using fuel program revenues to support the County's established greenhouse gas emissions reduction programs, with a particular emphasis on "greening" the County's vehicle fleet.

Summary of Recommendations

In collaboration with representatives from the TTC, A-C, CEO, and CSC, led by ISD, recommend:

- Centralizing and standardizing the administration, tracking, and reporting of the County's gasoline fuels pricing and usage under ISD.

- Utilizing a Commodities Risk Management Committee to develop and oversee a risk management policy for market-based, price commodities procured by the County.

    - Pursuing a hedge fund program strategy for the purchase of fuels, under the statutory authority of the ISD Purchasing Agent.

    - Seeking Board approval to engage a third party Financial Advisor to provide risk management consulting and contracting services.

- Working with the CEO to develop a cost recovery mechanism to support the programs and the resources aimed at "greening" the County fleet.

These recommendations are further described below.

Centralizing the procurement and contract management of vehicle fuels within ISD on an ongoing basis, and developing standardized and regular reporting of total vehicle fuel usage, fuel spending and commodities pricing

Because fuel purchases are decentralized, it is extremely difficult to collect data on countywide fuels consumption including volume of fuels used, unit price paid for fuels, market-based price volatility, and total cost of fuels paid by the County.

ISD currently collects and reports on similar information for countywide electricity, natural gas and water. Since ISD solicits and administers the current countywide contracts for the delivery of fuels to all departments, ISD plans to expand its processes to include countywide fuels. ISD will need to negotiate new terms and conditions with the fuels contractor(s) to collect information regarding fuels consumption by all departments under the contract to facilitate fuels reporting and countywide fuels price risk mitigation management.

Providing price risk management strategies that protect the County and departments from market pricing volatility

In its March 4, 2014 report to the CEO (Attachment 1), ISD proposed the formation of a Commodities Price Risk Management Committee (Committee) to develop and implement risk management strategies for commodities purchases where prices are based on market indices. The Committee has met twice, and has agreed upon the following:

- The Committee will consist of ISD, TTC, CEO and A-C. On an ad hoc basis, DPW, and/or representatives of other major user departments may be invited to participate to provide background, technical or other departmental-specific information regarding their respective commodities purchase(s).

- This Committee will be responsible to determine an appropriate risk management policy to protect the County from adverse changes in fuel prices for all of the County's market-based commodity purchases. This includes: gasoline fuels, natural gas, electricity, and carbon allocations (the County's two cogeneration plants at Pitchess Detention Center and at Civic Center must procure carbon allocations under California's Cap & Trade regulations).

- Since these commodities are, for the most part, centrally managed and/or administered within ISD already, ISD will work with TTC to implement any price risk management strategies approved by the Committee. To assist with this process, the Committee will utilize the services of an experienced financial advisor, Montague DeRose and Associates (the "Financial Advisor"), currently operating under a Board-approved Financial Advisory Services contract with TTC. The Committee and the Financial Advisor shall manage the risk portfolios and hedging strategies, as well as track any budgetary impacts.

- ISD, in consultation with TTC and the Financial Advisor, will work with the CEO to integrate the costs and other impacts of any price risk management program activities to the appropriate commodities' budgets. Such costs may include the associated staff time, the cost of financial advisory services, and any collateral requirements associated with the use of hedging instruments to support the price risk management program.

An example of how a gasoline fuels price risk management program would work is provided in a report prepared by the Financial Advisor (Attachment 2). This report describes an approach for mitigating the impacts of gasoline fuels prices on the County's gasoline budgets. The strategy involves the purchase of financial products that can improve the predictability of gasoline and diesel costs relative to future price fluctuations in the market.

ISD already manages natural gas price risk for the largest County natural gas consumption sites (cogeneration plants, probation camps, some hospitals) through a series of long-term, fixed price contracts with the County's natural gas provider.

The Committee shall determine the need for developing, modifying and implementing price risk management strategies for the commodities described earlier.

Using fuel program revenues to support the County's established greenhouse gas emissions reduction programs with a particular emphasis on "greening" the County's vehicle fleet

ISD has met with the CEO and with the CSC to discuss a program which provides necessary, centralized resources aimed at "greening" the County's vehicle fleet.

In particular, this funding will provide for the services described below.

- The program will provide dedicated, expert fleet and transportation resource(s) ($250,000), responsible to:
    - Acquire and administer grant funding, rebates and incentives for the development of electric vehicle (EV) charging infrastructure to support the conversion of the County's vehicle fleet to electric and promote employee and the public's use of EV.
    - Access other available funding for the procurement of new technology, clean vehicles for the County.
    - Serve as the County's central source and expert on clean fleet legislative and regulatory activities including: bill analysis, lobbying, developing proceeding filings, and participating in workshops.
    - Develop a long-term methodology for recovering EV charging infrastructure costs from users to reduce the need for central funding.
- The program will provide a reliable source of matching funds for EV infrastructure grants. Past and current EV grants have required a 50% match from awardees at approximately $5,000 per site. ($125,000)
- The program will fund operating expenses for the existing County EV charging infrastructure operating and maintenance costs including charging station maintenance and software license fees and labor. These funds are needed to pay these costs until an EV infrastructure cost reimbursement program can be developed. ($125,000)
- The program will provide labor and software licensing fees to use ISD's Energy Efficiency Management Information System (EEMIS) to manage centralized fuels data collection, archiving and reporting. ($20,000)

The objective of this program is to reduce the countywide fuels budget and recover the costs for operating an EV infrastructure. This will help facilitate the conversion of the County's gasoline fueled fleet to cleaner fuels and electricity. Under the County's initial EV charging installation pilot program, which provides 117 charging stations at various County locations, charging station operating costs are about $100,000 per year (including electricity at about $50,000). As the County's EV charging infrastructure grows, these costs should be recovered by the users of the charging infrastructure.

Conversion of 100 gasoline fueled sedans each year (out of the County's approximate 1,500 eligible sedans) will require about 40 EV charging installations just for County vehicles. Also, based on the Department of Regional Planning's Community Climate Action Plan goal of implementing 500 EV charging stations by 2020 at County locations, the EV charging infrastructure operating costs will be nearly $500,000 per year and must be recovered from County-owned, employee-owned and public-owned EV vehicle users.

ISD and the CEO continue to discuss the possible use of AB 2766 funding to cover the ongoing program costs, to be offset by a usage fee for the customers of EVSE. This will be brought forward as part of ISD's FY 16-17 budget submission.

Conclusion

As the Board noted in its September 8, 2015 motion, the County would benefit from a centralized gasoline fuels management program that: tracks and reports on Countywide fuels consumption and spend, manages price risks related to the County's vehicle fuels procurement and provides coordinated services for planning and facilitating the conversion of the County's fleet to cleaner sources.

The recommendations in this report will provide the mechanism to accomplish these charges and establish a successful program.

ISD will request implementation as part of the 2016-2017 County Budget. ISD, on behalf of the Committee, will separately request Board approval of the price risk management strategy, in the spring of 2016.

If you have any questions regarding this report, please contact me at (323) 267-2103 or have staff contact Howard Choy at 323 267-2006, or via email hchoy@isd.lacounty.gov.

DC:HWC
Attachments

c: ISD Board Deputies
Chief Executive Officer

Chief Operating Officer
Executive Officer, Board of Supervisors
Auditor-Controller
Countywide Sustainability Council Leadership Committee
Department of Public Works
Fire Department
Treasurer and Tax Collector

County of Los Angeles
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"To enrich lives through effective and caring service"

March 4, 2014

To: Santos Kreimann
Deputy Chief Executive Officer

From: Jim Jones
Director

SUBJECT: **PROPOSAL FOR COUNTYWIDE COMMODITIES PURCHASING ADVISORY COMMITTEE**

This is to seek your Office's approval to create a Commodities Purchasing Advisory Committee, to include representatives from the CEO, the Treasurer and Tax Collector (TTC), ISD, and other major departments as appropriate.

The purpose of the Committee is to evaluate the cost/benefit of short- to long-term purchase contracts and/or other transactions designed to mitigate market price risk to the County when purchasing volatile commodities like energy.

Background

The County procures, or will procure, various commodities that are subject to market based pricing. These include: vehicle fuels (gasoline and diesel), natural gas, electricity, and carbon allocations, all of which are part of the implementation of California's Global Warming Solutions Act (AB 32).

Using standard, market-based financial price mitigation strategies; these commodities' budgets can be shielded from market price volatility to become more predictable and stable.

Price risk management strategies are currently employed for procurement of natural gas for the County's largest natural gas consumption sites (cogeneration plants and large campuses). This strategy was adopted shortly after the "energy crisis" in Fiscal Year (FY) 2000/01 and beyond.

Prior to FY 2001/02, ISD purchased natural gas for these large sites under a market-based pricing contract. During FY 2000/01, market natural gas prices increased by as much as three times higher than the benchmark prices that were used to establish those budgets, and ISD requested a $57.6 million budget adjustment. Since then, ISD has adopted a risk mitigation program (multiple-year, fixed price contracts) for natural gas, which has provided budget stability for the County and affected departments.

Vehicle Fuel Purchases

Currently, vehicle fuels (gas and diesel) are purchased under both wholesale and retail contracts and pricing is subject to a weekly market index. The County has no mitigation strategy in place for vehicle fuels price volatility due to market or other influences.

Working with TTC, TTC's financial advisor, and input from other departments, ISD prepared the attached analysis of how vehicle fuels price volatility can be mitigated, and County fuels budgets can become more stable and predictable through prudent use of common financial instruments.

The attachment also includes a description of the proposed Commodities Purchasing Advisory Committee, including the Committee's makeup, functions, and the current commodities budgets. As proposed, the Committee would recommend and adopt risk management strategies and propose them for implementation into the various commodities budgets.

ISD also proposes that the Committee provide recommendations on other commodities, such as carbon credits now available under California's cap and trade program. The County's cogeneration plants at Pitchess and Civic Center must procure carbon emission allocations beginning in FY 2015/2016 through 2020. The price for these allocations is market-based, and will be procured directly or through brokers.

Electricity in California will soon be available from third party suppliers as the State moves back into "deregulation;" and self-generation of electricity in County sites through new cogeneration or solar installations represents a strategy for mitigating potential electric utility price increases (and reducing County greenhouse gas emissions).

We believe it is prudent for the County to examine these risks and propose mitigation strategies, as necessary. Detail on the proposed Committee composition and annual cost is included for discussion purposes.

If you have any questions, please contact me at (323) 267-2101.

JJ:HWC:dm
Attachment (1)

c: Howard Choy, ISD
Mark Saladino, TTC
Glenn Byers, TTC
Gevork Simdjian, CEO
Chiu Lee, CEO

County Fuels Risk Management Proposal

Background

The Internal Services Department solicits proposals and executes agreements for purchasing vehicle fuels (gasoline, diesel, jet fuel, etc.) for all County departments. The current agreement term is three years with two, one-year options (that have been executed) and runs through March 31, 2015. Under the agreement, fuels are purchased at market-based prices. ISD also uses the State of California's agreement with Voyager for credit card fuel purchases at commercial (retail) stations. Four departments; Sheriff, Public Works, Fire and ISD account for almost 85% of all of the County's annual fuel purchases under the agreement.

As part of ISD's efforts to quantify Greenhouse Gas emissions production (GHG) for internal County operations, ISD staff discovered the following:

- The County's centralized cost accounting system tracks the total fuels costs (payments) by department; but total volume (gallons of fuels) purchased and fuels pricing are not tracked in "real time."
- The individual departments listed above keep track of fuels payments (in dollars) and gallons of fuel purchased via invoices from the contracted supplier.
- There is no central system in place for answering the following questions: "how much fuel does the County consume and what does the County pay for it?"
- The questions above can only be answered by manually collating data from various sources.

Additionally, ISD staff learned the following while gathering information for the GHG inventory:

- The price for fuel purchases from the contracted supplier is based on a weekly, market index.
- The historic, market index price of various fuels is available but generally not tracked.
- The forecasted market price of various fuels is available but not tracked.
- The departments that purchase fuels have expressed an interest in contracting and budgeting for fuels procurement where price volatility (and thus budget volatility) can be mitigated.

ISD has met several times with the Treasurer and Tax Collector (TTC) and their Financial Advisor (Montague DeRose & Associates) to discuss price risk management options for County fuels purchases.

Proposal

The following proposals were developed based on ISD's experience mitigating price risk for County facilities' natural gas purchases (for power plants and large campuses), consultations with TTC's Financial Advisor (who have significant experience developing similar programs for other municipal entities) and discussions with the CEO and Auditor Controller regarding the County's "risk appetite" to more actively manage fuel cost volatility

The County can purchase certain products available in the commodities markets to accomplish the following:

- The overall price per gallon of fuel can be "fixed" on a monthly basis for a specified term in the future (Fixed Price Contract);
- The maximum price per gallon on a monthly basis for a specified term in the future can be "capped" (Option Price Contract);
- All or a portion of the County's fuel purchases can be included under this risk mitigation strategy.
- The term (duration) for "fixing" or "capping" the overall or maximum price per gallon can be varied.

The purchase of Fixed Price and Option Price Contracts would have no impact on the current fuels supply contract; nor would they have any impact on the County's current fueling practices and/or commodity payment procedures. These products can also be utilized for the County's Voyager credit card program fuel purchases.

In lieu of purchasing Fixed Price Contracts and Option Price Contracts from the commodities market, such products could be provided by the actual fuels supplier under a renegotiated fuels supply contract or through the next fuels supply contract solicitation.

The pros and cons of these types of fuel hedging strategies are described below.

Pros

- The price of fuel paid by departments can be fixed or capped thus providing budget certainty.
- Departments' fuels purchases and budgets can be protected from increasing prices.
- There may be times where the price paid for fuels is lower than the market price.

Cons

- There may be times when the price paid for fuels is higher than the market price.

- Departments would pay a “premium” per unit of fuel purchased to establish a maximum price cap under an Option Price Contract.

Based on consultations internally within ISD, with TTC and their Financial Advisor, and other departments, ISD is proposing to establish a Commodities Risk Management Committee to provide an oversight and control process for the Fuel Risk Management Program, and other similar County programs where market based commodities are purchased. The following commodities could be subject to oversight by the Commodities Risk Management Committee:

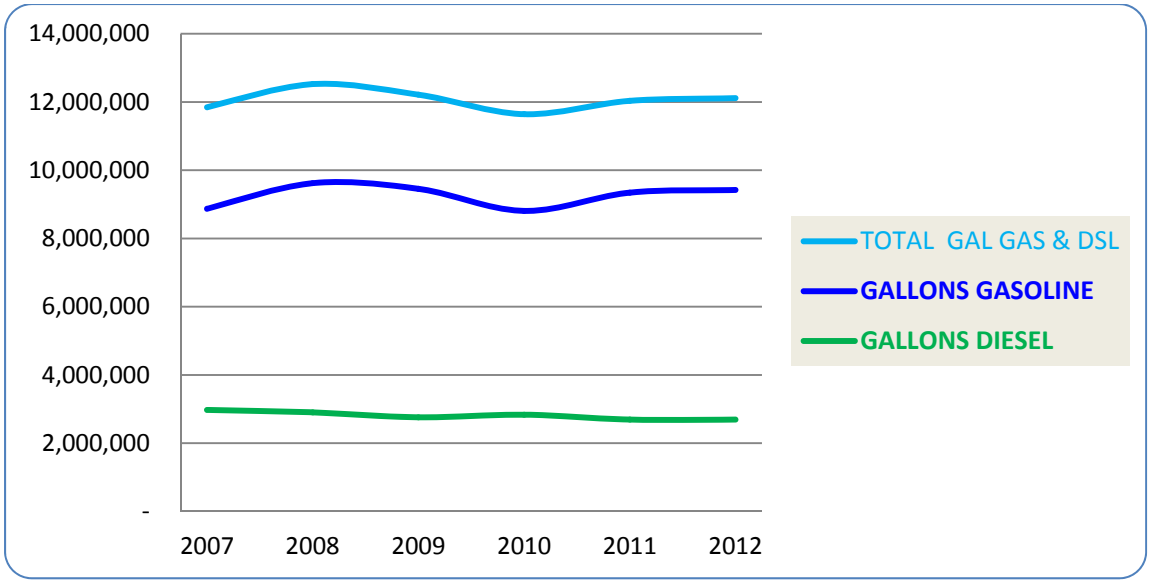
- Natural gas for power plants and large campuses (already utilizing long-term, fixed price contracts), 2013-2014 budget: $50 million
- Vehicle gasoline and diesel (as proposed in this document), 2013-2014 budget: $52 million
- Carbon allocations under California’s Cap & Trade market (the County’s cogeneration plants at Pitchess and Civic Center are required to purchase allocations beginning November of 2014 and through 2020: based on market prices; $800,000 for 2014 and potentially increasing to several million dollars per year thereafter.
- Electricity for County facilities (California’s electricity market will likely be deregulated in the future thus re-introducing alternative and market-based suppliers of electricity), 2013-2014 budget: $100 million

Further information on the County’s fuel procurement program and how price risk could be mitigated under the Fuel Risk Management Program is included in the following Attachment: County Fuel Price Risk Mitigation. This attachment includes the amount and types of fuel the County purchases, the pricing for the fuel purchases under the current agreement, and the variation in pricing and purchases. Additionally, the Attachment illustrates how fuels pricing variability might be mitigated and what the costs and risks are for doing so. An indicative pricing example for mitigating price volatility on July 1, 2015 is also provided.

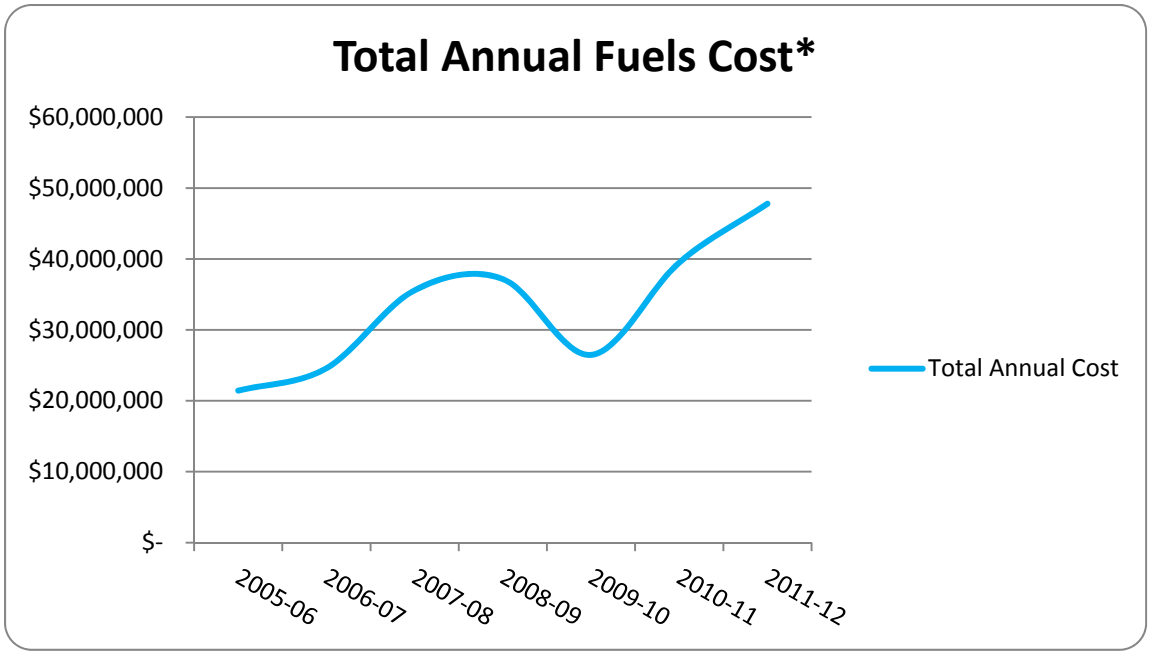
ATTACHMENT

County Fuel Price Risk Mitigation

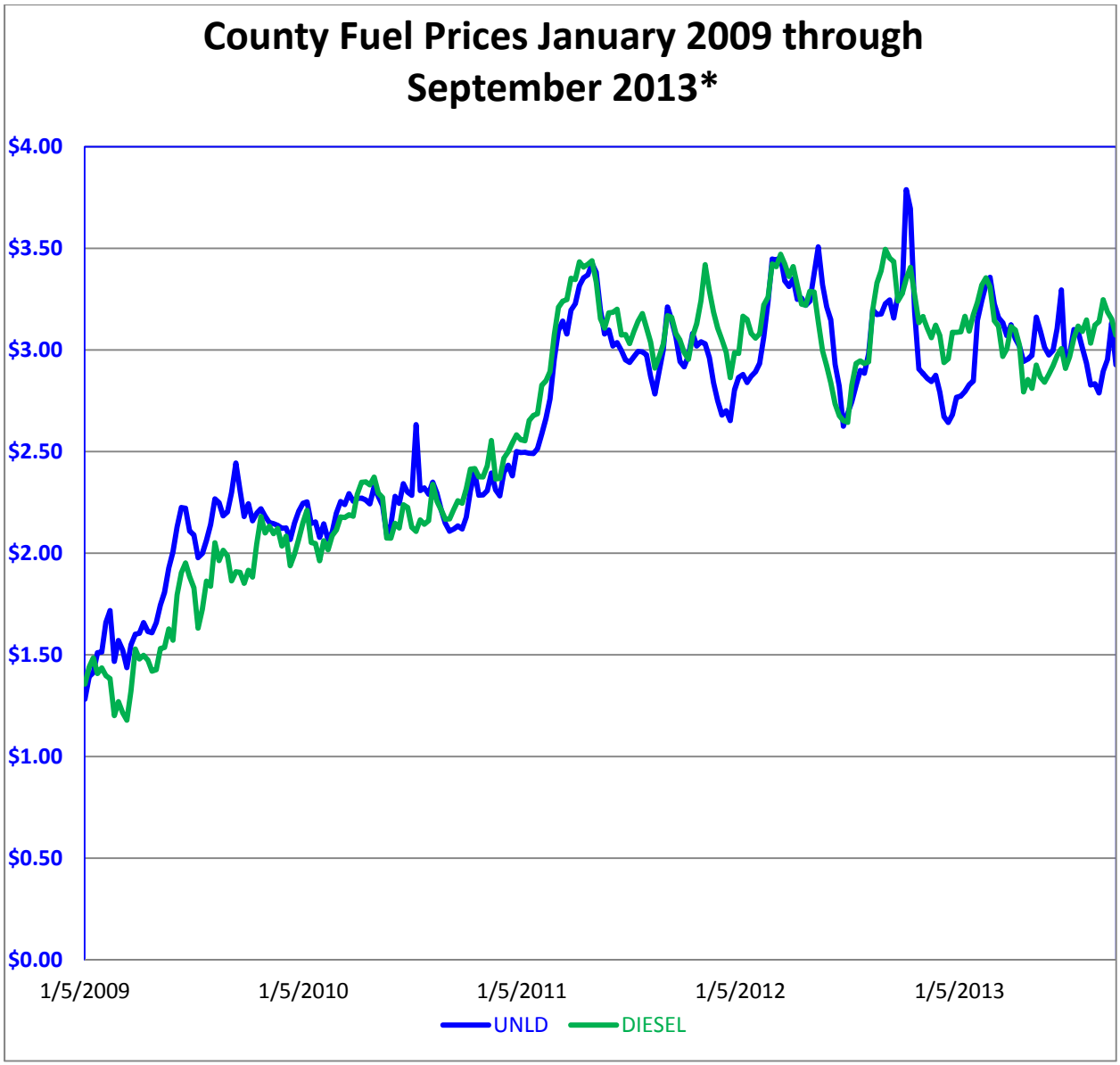
Historical County Fuels Consumption by Volume*



*Steady or constant annual volumes help mitigate volumetric risk/variables in budgets.

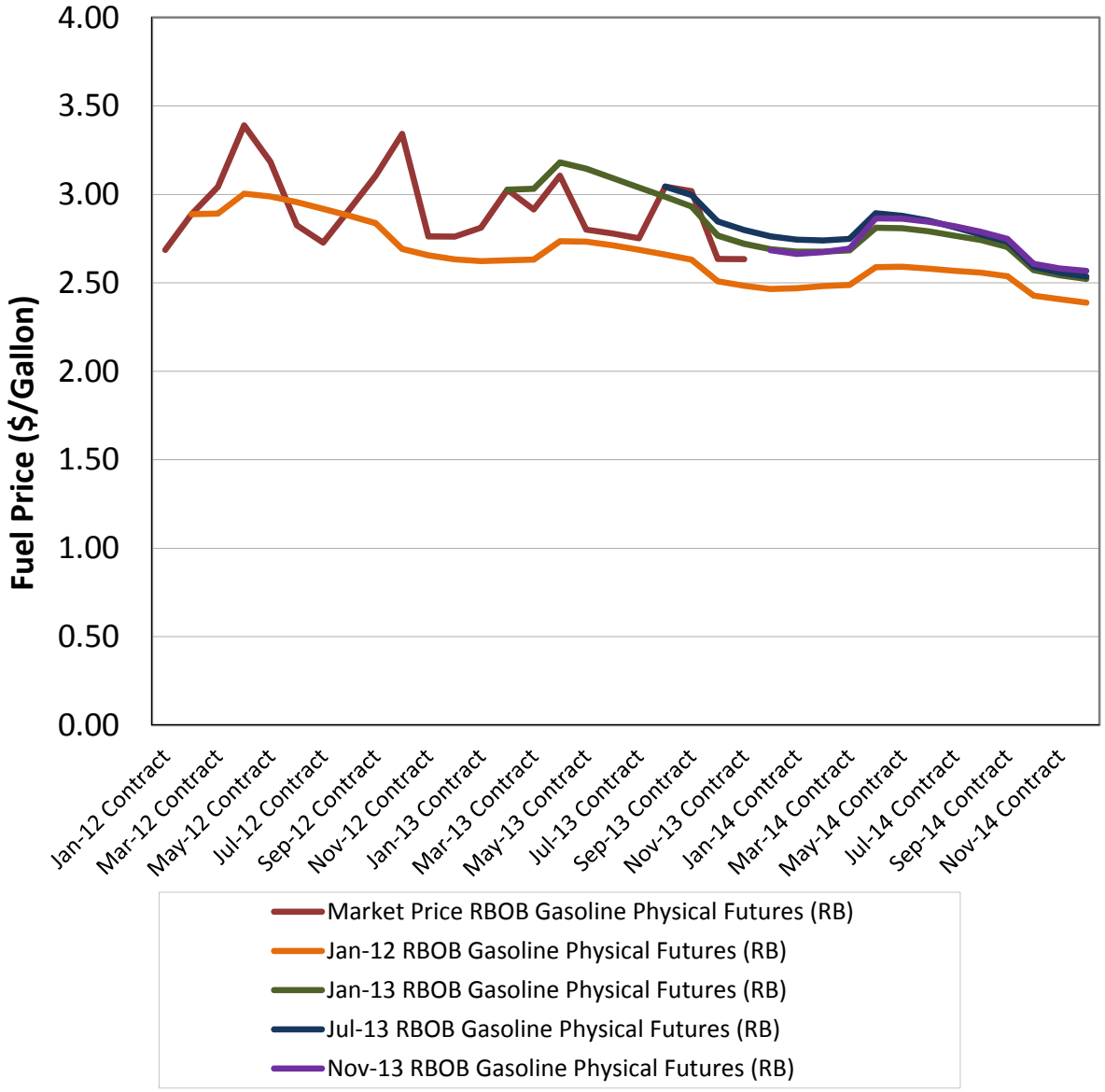


*Given the relatively stable consumption volume, annual cost variations reflect price volatility and fuels budgeting volatility.



*Historical fuels prices paid by the County based on the market index price used under the County's past and current fuels agreements. These market index prices would be extremely vulnerable due to events such as: refinery shutdowns, weather events impacting drilling rigs, political events in oil producing countries, and possible state/federal legislative or regulatory actions.

Examples of Fixed Price Contracts Opportunities in 2012 - 2013*



*****These curves represent contract prices the County could be operating under today if Fixed Price contracts were executed in the past.

January of 2012 (orange line) represents forward fixed prices available in January of 2012 through November of 2014. A fixed price contract executed in January of 2012 would have consistently been lower than market prices through November of 2013.

January of 2013 (green line) represents fixed prices available in January of 2013 through November of 2014. A fixed price contract executed in January of 2013 would have been slightly higher than market prices through November of 2013. Comparison of the fixed price purchase through November of 2014 depends on future, actual market prices.

July of 2013 (blue line) represents fixed prices available in July of 2013 through November of 2014. The benefit of this fixed price contract depends almost entirely on future, actual market prices.

November of 2013 (purple line) represents fixed prices available in November of 2013 through November of 2014. The benefit of this fixed price contract depends entirely on future, actual market prices.

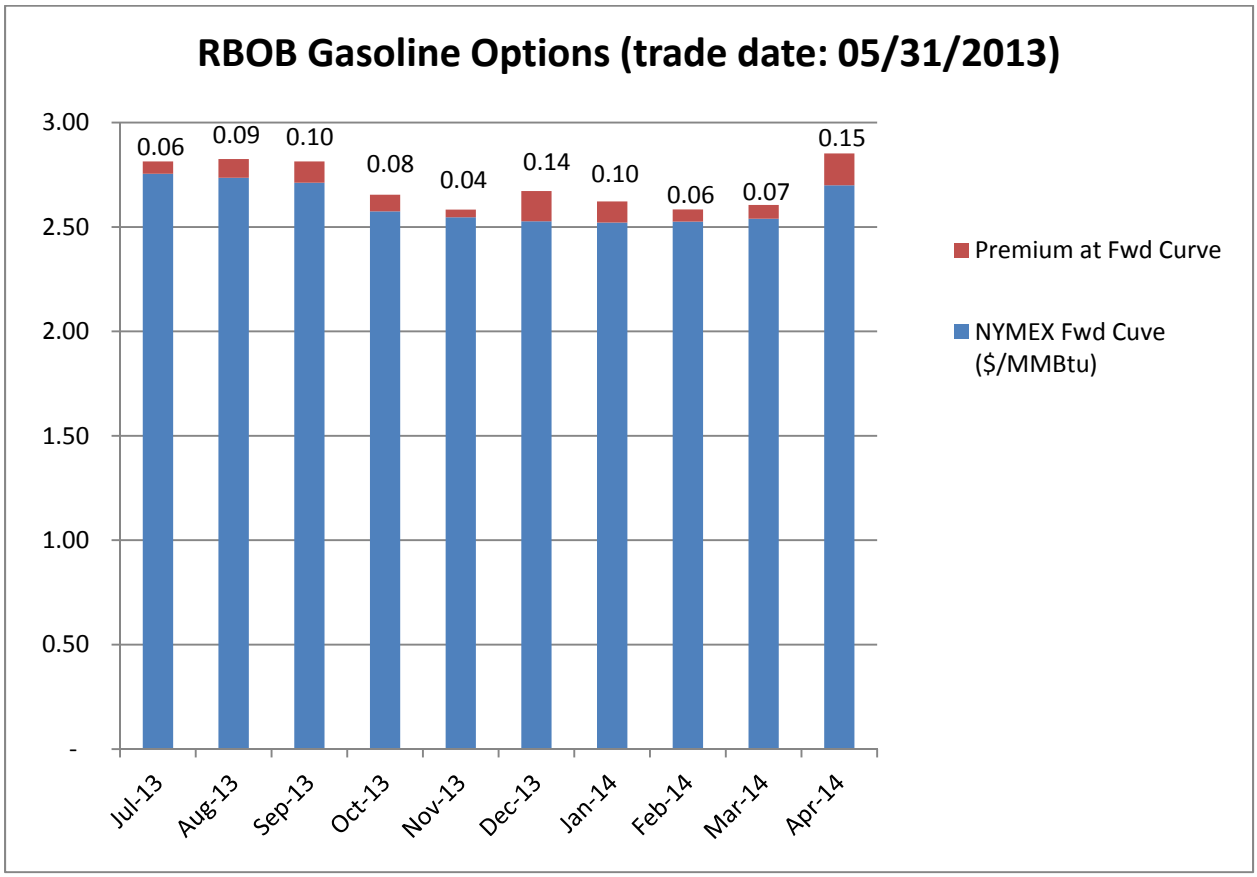
Actual market prices for fuel over each month from January of 2012 to November of 2013 are represented by the brown line. Seasonal pricing variability is somewhat predictable, the trends over time (as well as any outside market influences) are not predictable.

ISD's experience with departments and the CEO is that price stability has as much benefit (if not more) than "beating" the market.

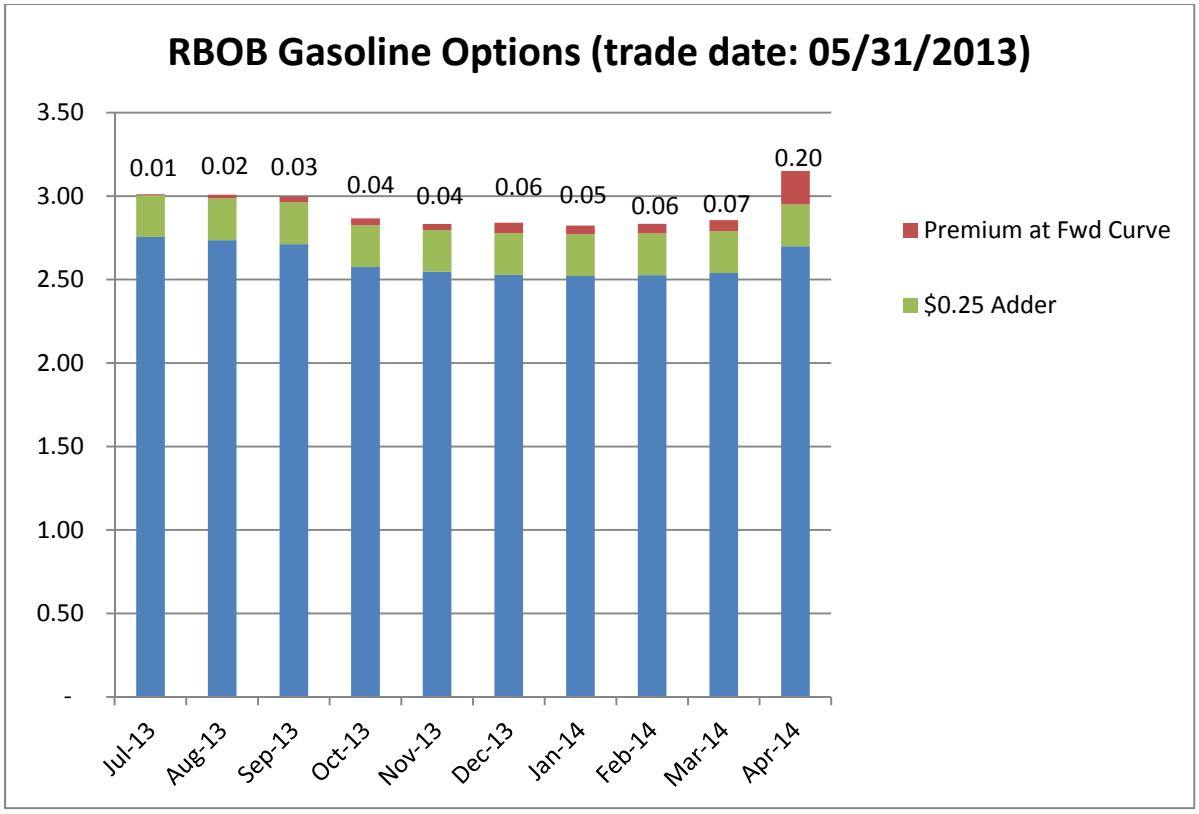
Examples of Option Price Contracts

To cap the price of fuels and take advantage of any fuel price declines, the County can enter into "*option*" contracts. The County could buy an "option" to purchase fuel with a small upfront cost called a "premium." Typically, within six to twelve months of the current date, an option contract can be entered that would lock in the future price. From a fuels budget standpoint, the effective price of purchased fuel is the actual market price plus the premium. If fuel prices increase, the value of the option contract (the difference between the option and the market) effectively lowers the price per gallon of fuel in the fuels budget. If fuel prices decline, the County can back out of the contract by not exercising its "option" and purchasing fuel at the lower market price when the fuel is needed. The price of the premium is absorbed into a centralized fuels budget effectively increasing the price per gallon of fuel in the fuels budget.

The example below provides actual pricing for purchasing options from July 2014 through April 2014. The premium for purchasing the option (and thus capping the price paid per gallon) is shown relative to the price of a gallon of fuel.



The premium price can be reduced by paying an “adder” per gallon of fuel which increases the option price per gallon of fuel. For example, increasing the option price by $0.25 (a 25 cent “adder” to the contracted price per gallon) nearly eliminates the premium paid for the option. The premium is reduced but the option price is increased.



Summary of Fuel Procurement Risk Management for FY 2014-15*

Using the data provided in the examples above, a Fixed Price contract can be procured (at the time of writing this report - January of 2014) at an average of around $2.80 per gallon. This price will be paid regardless of the market price.

An option index can be procured (at the time of writing this report - January of 2014) at an average of $0.10 per gallon which will guarantee that the County would not pay higher than about $2.60 per gallon (average for the time period shown).

By using an “adder”, an option index can be procured at virtually no premium which will guarantee that the County would not pay higher than about $2.85 per gallon (average over the time period shown).

*These summaries have been estimated for FY14-15 based on data available for CYs 2013 and 2014. Actual contract quotes for the FY14-15 period are being acquired.

Risk Mitigation and Impacts on Voyager Credit Card Purchases

As stated earlier, these products can also be utilized for the County's Voyager credit card program fuel purchases.

County drivers would procure fuels at retail outlets in accordance with the established Voyager process. If the fuel cost in the Option Price Contract is lower than the market price (as reflected by retail prices at the commercial stations) the County would receive a payment based on the difference between the fuel price in the Option Price Contract and the market price. If the fuel cost in the Option Price Contract is higher than the market price, the County would pay the market price, and would also pay the higher marginal cost reflected in the Option Price Contract.

Proposed Countywide Commodities Purchasing Committee

Members: CEO (chair), TTC, Auditor Controller, ISD, and other large impacted departments (e.g., Sheriff, Public Works, Health Services, Fire) that may vary depending on the commodities involved.

Purpose: Committee makes all decisions on commodity procurement risk management, price hedging strategies and decisions, and performance reporting to CEO.

Programs to be included: natural gas, vehicle fuels (gasoline, diesel), CO2 allocations, electricity, other commodities as they are identified

Additional costs for County Risk Management Program (to be funded out of the commodities procurement budgets):

ISD Labor: $100,000 (to manage the commodities contracts and use of EEMIS for all commodities – currently only fuels are not centrally managed under EEMIS. See proposal below.

TTC Labor: $50,000 (to review commodities contracts and manage the Financial Advisor contract)

Financial Advisor: $50,000 (to provide risk management consulting and contract review)

Proposal for Centralized Fuels Management:

All department monthly fuels purchase volumes, amounts and pricing can be tracked in ISD's Enterprise Energy Management Information System (EEMIS). Data can be acquired directly from the agreement fuels provider and any risk management contract provider.

Reporting can be generated using EEMIS software and database. Inter- and intra-departmental fuels invoices and reporting can be generated for internal billing.

Additional cost to implement County-wide fuels procurement and price risk management into EEMIS is included in the ISD, TTC and consultant labor costs above. This can be integrated by July 1, 2014.

Memorandum

To: Los Angeles County

From: Montague DeRose and Associates, LLC

Date: March 25, 2015

Subject: **Diesel Fuel and Gasoline Hedging Program Budgetary Considerations**

Montague DeRose and Associates ("MDA") has prepared the following analysis and recommendations to assist Los Angeles County ("the County") in evaluating its decision to begin a hedging program for diesel and gasoline. The analysis is based on commodity purchases. The purpose of this memo is to provide the County with an estimate of its cost of a hedging program and to make recommendations for risk management best practices.

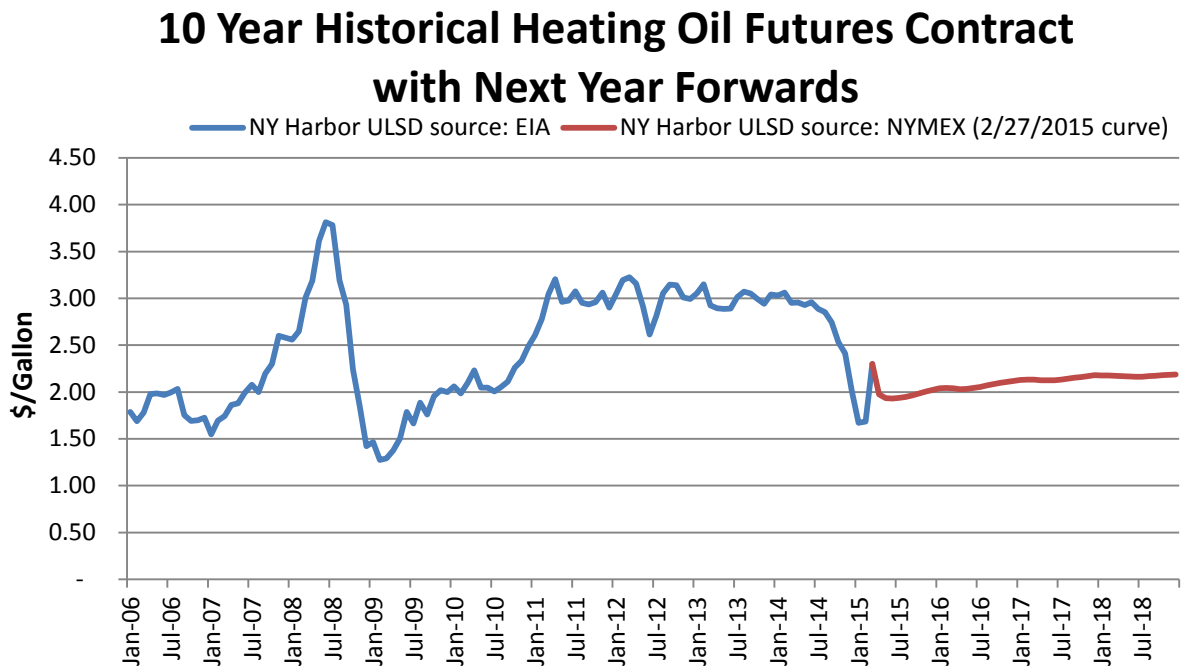
The analysis uses the following assumptions and data:

- ✓ combination of forward contracts and options are used
- ✓ fuel delivery will begin in July 2015
- ✓ annual volume of approximately 2.7 million gallons of diesel and 9.4 million gallons of gasoline
- ✓ forward curve and option prices (2/27/2015) from the New York Mercantile Exchange (NYMEX) future fuel prices are projected from data published by the Energy Information Administration, CME Group/NYMEX and Bloomberg to derive a forward curve
- ✓ Prices used are the New York Harbor Ultra Low Sulfur Diesel ("NY Harbor ULSD") and Reformulated gasoline Blend stock for Oxygen Blending ("RBOB")

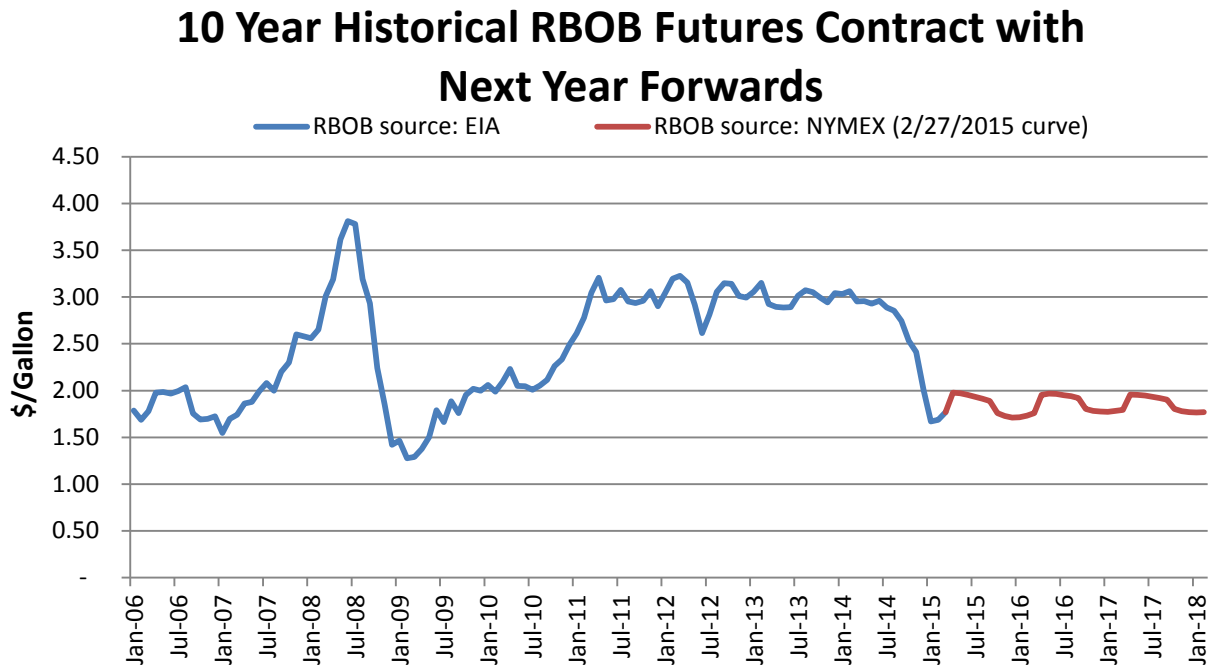
Benefits of Hedging and the Current Commodity Market

A hedging program can reduce future price volatility and market risk. In addition, the current low prices – from a historical perspective - of both commodities makes it an attractive strategy to lock-in prices. In the following pages we present information on the current and historical fuel prices to illustrate the market trends. As the charts demonstrate, fuel prices, both gasoline and diesel, are at or near their 10-year historic lows.

Historical Prices - Current market prices for both diesel and gasoline are favorable. NY Harbor ULSD is near its 10-year low as shown in the historical spot price chart below.

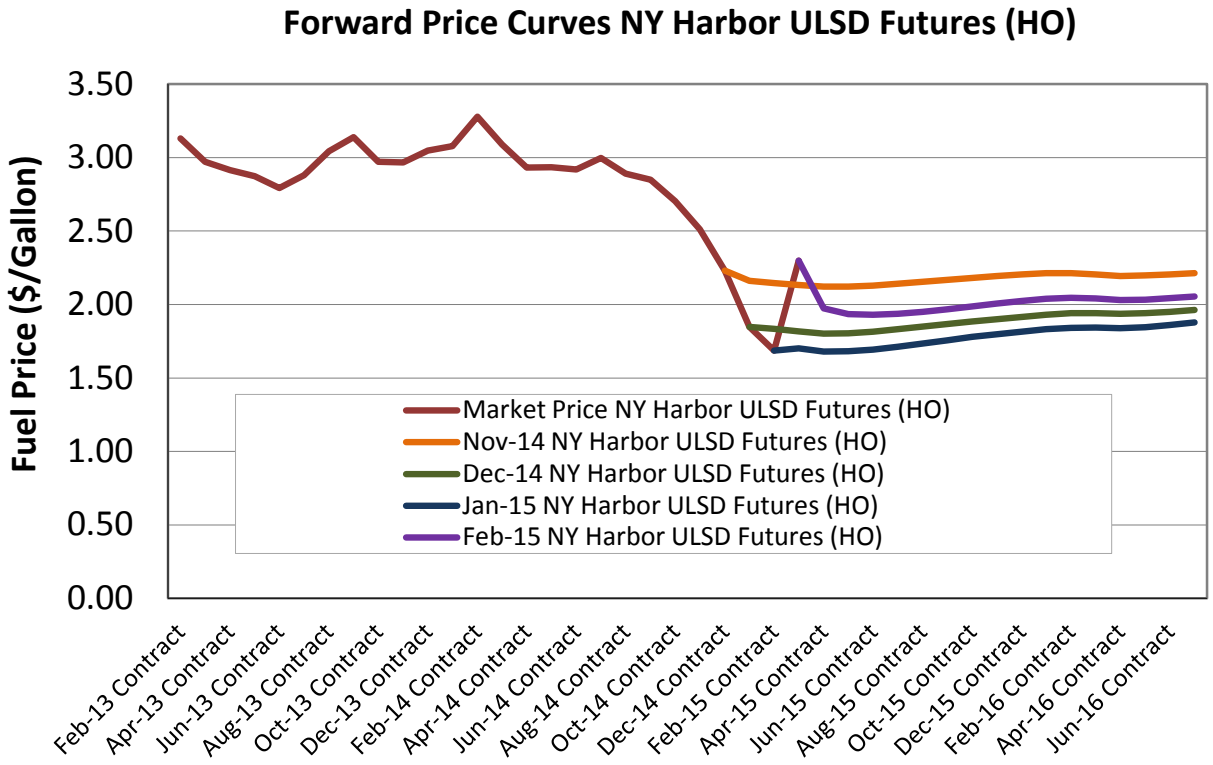


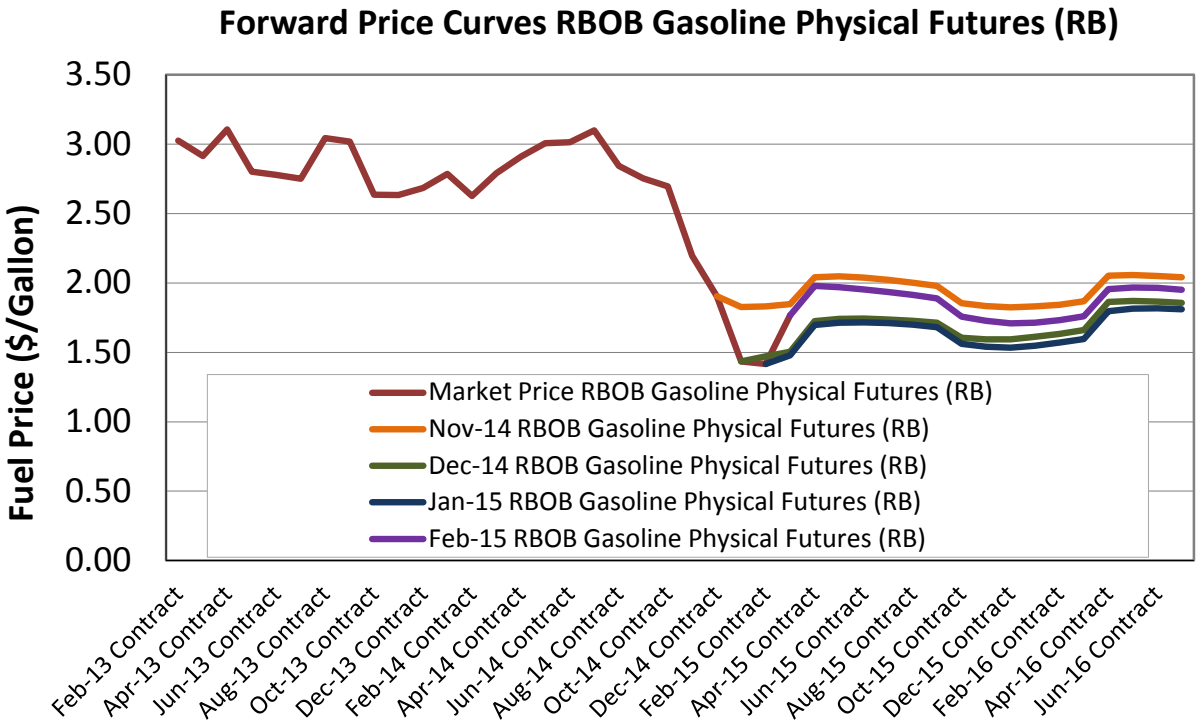
Similarly, the RBOB is near its 10-year low as illustrated in its historical spot price chart below.



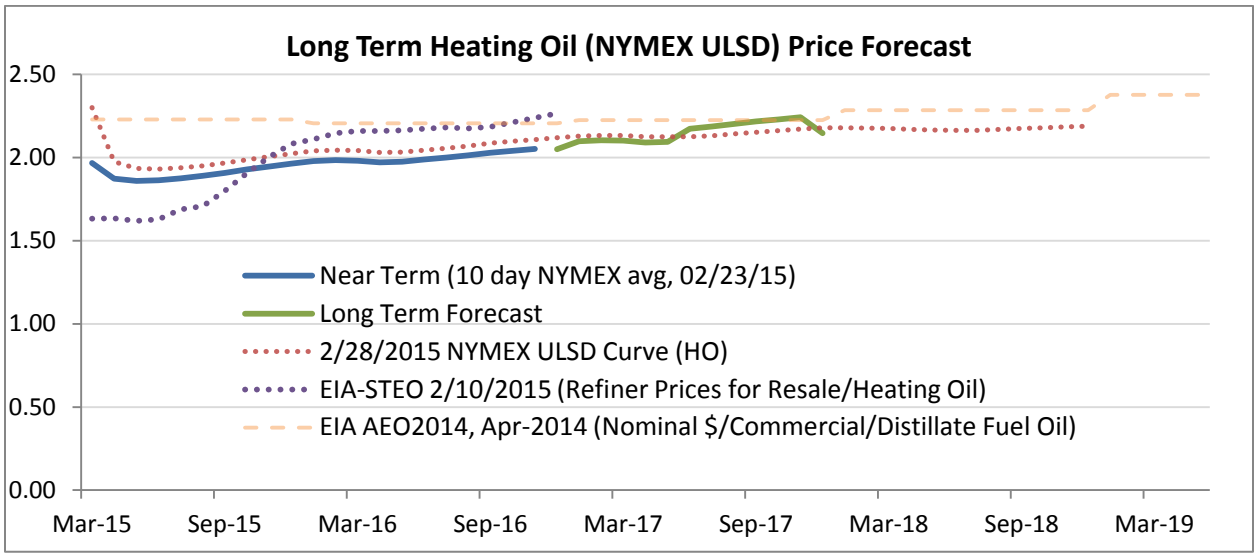
Forward Prices - The forward price curves over the last year are illustrated in the following charts. The drop in the forward curve in 2014 has been dramatic although there has been a

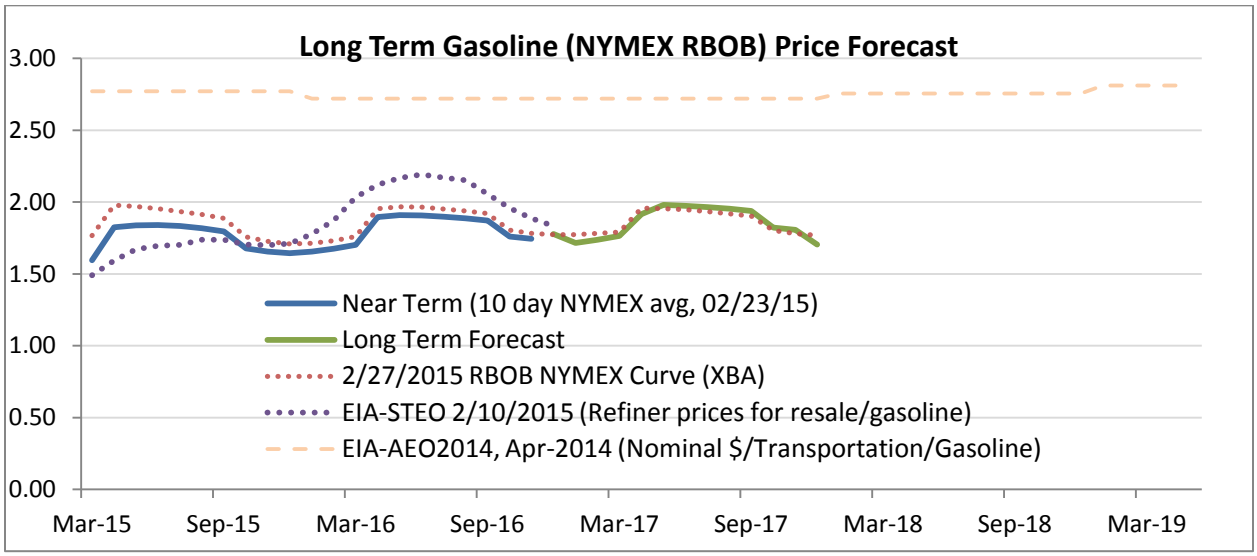
slight rebound in February 2015. NY Harbor ULSD shows a very flat but slightly rising forward curve. RBOB shows a seasonal curve, but also slightly rising.





As the following graph shows, there is little consensus on future prices for both commodities, reflecting their price volatility. For both commodities the forecast predicting the highest prices was prepared by the Energy Information Administration (EIA) in its 2014 Annual Energy Outlook. The next lower forecast is from the EIA's Short Term Energy Outlook from January 2015. While the forecasts vary in terms of the projected price, they all show an upward trend reflecting the expectation that prices will increase in the next few years. However, it is important to note that even when prices are low and forecasts show a rising price trend, prices could drop lower still, exposing the County to higher prices than would have been paid in the spot market.





Note: The EIA-AEO 2014 RBOB forecast was removed from the calculation of the long term forecast in the graph above because it was very high compared to the current futures market. It is shown for illustrative purposes to demonstrate the volatility of gasoline prices over the last year.

Hedging Strategy

The County can use any combination of forward contracts, financial swaps and options to implement its hedging strategy. Forward contracts are the simplest way to hedge. A forward contract is typically a bilateral agreement with a counterparty that establishes a single fixed price for delivery each month. Instead of a fixed forward contract a financial swap may be used, generally at the same forward price. A swap will require the posting of collateral and and a monthly mark-to-market true-up. The collateral will be drawn down if the spot market price is lower than the agreed swap price, or the collateral will be released back to the County if the spot market is higher than the agreed swap price.

An option, can have various strike prices (single fixed price) and can come in many forms including, calls, puts, collars and barriers. Call options provide the purchaser the option and not the obligation to purchase the underlynig commodity at a fixed price. Options can contain a price floor, a price ceiling or both. An option carries a premium, which is paid regardless if the option is executed. The cost of an option is dependent on the implied volatility of the underlying commodity. Greater market volatility will result in a higher option premium and vice versa.

While there are several approaches that the County can employ in its hedging strategy, MDA analyzed the two possible hedging strategies described below. The County could either hedge 100% of its total volume or purchase some of its volume on the spot market. For simplicity, we assume that the County will hedge all of its total volume with an allocation of 75% to forward contracts and 25% to options. We do not generally recommend an overweight to options versus forward contracts as options can be costly; however, if option prices are attractive at the time the County executes it hedging strategy, it may consider increasing its exposure to options.

Single Transaction Purchase – The County could choose to hedge its commodity price exposure all at once through a competitive procurement process in which the County would select one or more suppliers or through an exchange as described above. The benefit of this strategy is the reduced administrative burden on County resources and increased price certainty by being hedged. One disadvantage is that the County would not realize additional savings if prices were to fall.

Dollar Cost Averaging – Instead of hedging all at once, the County could execute hedges for portions of its volumes at different points in time over the course of the year. For example, the County could enter into new forward and option contracts each month beginning July 1st for the expected monthly volume or the County could decide to execute less frequent transactions such as every three months for the expected 3-month volume. The benefit of this strategy is that the County could use a cost averaging approach to benefit from falling prices. However, this strategy would require greater County resources to oversee the periodic hedges as well as manage the hedging portfolio.

Hedging Program Budget for Diesel Fuel

Based on a January-2015 forward curve for NY Harbor ULSD, we estimate the following monthly prices and costs for the County using a single price strip. Because the future forward prices are not known, we cannot estimate the cost of a single transaction puchase strategy

versus a dollar cost averaging strategy. In the table below, column A represents monthly cost for 75% of the County's annual diesel volume purchased as forward contracts. If swaps are used for that same volume, a collateral posting of $224,685 would be required (column B) at the time of the transaction, and assuming the spot price matches the below forward price, the remaining cost of the commodity would be due when fuel is delivered (column D). Column E represents the cost of the option premiums due at the time the County enters into its transaction with column F indicating the commodity cost for those options when the fuel is ultimately delivered.

	Prices			Forward Contract	OR	Swaps			+	25% Options		
	Forward Mkt	Option Premium		Commodity Cost		Collateral	Commodity Cost	Total		Premium	Commodity Cost	Total
	($/gal)	($/gal)		($)		($)	($)	($)		($)	($)	($)
Feb-15						224,685		224,685		135,474		135,474
Jul-15	1.94	0.16		325,981			305,495	305,495			108,660	108,660
Aug-15	1.95	0.18		327,882			307,616	307,616			109,294	109,294
Sep-15	1.97	0.19		330,758			310,823	310,823			110,253	110,253
Oct-15	1.99	0.19		334,190			314,585	314,585			111,397	111,397
Nov-15	2.01	0.20		337,386			318,112	318,112			112,462	112,462
Dec-15	2.02	0.21		340,296			321,462	321,462			113,432	113,432
Jan-16	2.04	0.20		343,038			324,645	324,645			114,346	114,346
Feb-16	2.04	0.21		343,946			325,883	325,883			114,649	114,649
Mar-16	2.04	0.21		343,307			325,464	325,464			114,436	114,436
Apr-16	2.03	0.22		341,390			323,877	323,877			113,797	113,797
May-16	2.03	0.23		342,012			324,720	324,720			114,004	114,004
Jun-16	2.04	0.24		343,845			326,664	326,664			114,615	114,615
Average	2.01	0.20	Total	4,054,032		224,685	3,829,347	4,054,032		135,474	1,351,344	1,486,818
				A		B	C	D=B+C		E	F	G=E+F

The result is the total annual cost for the diesel fuel hedging program can be estimated at $5.5 million (Column A or D plus column G) resulting in an effective price of $2.06/gallon

Hedging Program Budget for Gasoline

Similar totals for gasoline purchases are in the table below. Note that in several months there were no RBOB option purchase prices available so MDA has substituted a 28 cent/gallon premium (Nov-15, Jan-16 to Mar-16, May-16 to Jun-16) to provide a conservative estimate. Also note that option purchase price data is not available beyond the next five months for gasoline. The option premiums presented below are as of 1/31/2015. In this case MDA would recommend the County purchase options as they become available generally three months before delivery

In the table below, column A represents the monthly cost for 75% of the County's annual gasoline volume purchased as forward contracts. If swaps are used for that same volume, a collateral posting of $784,106 would be required (column B) at the time of the transaction, and assuming the spot price matched the below forward price, the remaining cost of the commodity would be due when fuel is delivered (column D). Column E represents the cost of the option premiums due at the time the County enters into its transaction with column F indicating the commodity cost when the fuel is ultimately delivered.

	Prices			Forward Contract	OR	Swaps			+	25% Options		
	Forward Mkt	Option Premium		Commodity Cost		Collateral	Commodity Cost	Total		Premium	Commodity Cost	Total
	($/gal)	($/gal)		($)		($)	($)	($)		($)	($)	($)
Feb-15						784,106		784,106		565,525		565,525
Jul-15	1.94	0.15		1,139,257			1,066,012	1,066,012			379,752	379,752
Aug-15	1.91	0.18		1,127,128			1,053,883	1,053,883			375,709	375,709
Sep-15	1.89	0.18		1,111,644			1,038,399	1,038,399			370,548	370,548
Oct-15	1.76	0.21		1,035,340			962,095	962,095			345,113	345,113
Nov-15	1.73	0.28		1,016,971			955,291	955,291			338,990	338,990
Dec-15	1.71	0.20		1,006,550			944,870	944,870			335,517	335,517
Jan-16	1.71	0.28		1,009,376			947,696	947,696			336,459	336,459
Feb-16	1.73	0.28		1,020,091			958,411	958,411			340,030	340,030
Mar-16	1.76	0.28		1,036,223			974,543	974,543			345,408	345,408
Apr-16	1.96	0.28		1,151,032			1,090,123	1,090,123			383,677	383,677
May-16	1.97	0.28		1,158,156			1,097,247	1,097,247			386,052	386,052
Jun-16	1.97	0.28		1,157,155			1,096,246	1,096,246			385,718	385,718
Average	1.84	0.24	Total	12,968,924		784,106	12,184,817	12,968,924		565,525	4,322,975	4,888,500
				A		**B**	**C**	**D=B+C**		**E**	**F**	**G=E+F**

The total annual cost for the gasoline fuel hedging program can be estimated at $17.9 million (Col A or D plus col G) resulting in an effective price of $1.90/gallon

The budget presented above is based on forward and option pricing available on January 31st. Prior to executing its hedging program and/or submitting its departmental budget for FY 15-16, it may be necessary to update this analysis with the latest forward price curves and option prices to provide a more accurate estimate. It is also important to note when the cash outlay occurs for each type of hedging tool. For forward purchases the cash outlay occurs when fuel is delivered. For swaps, the collateral cash outlay occurs when the swap is purchased, with the full cash outlay for the final price occuring upon delivery. The cash outlay for option premiums occurs when the option is entered into with the full price for the cash outlay for the commodity due when the fuel is delivered at either the option strike price or spot market price.

The above analysis and budget was conducted on NY ULSD and RBOB gasoline as those are the commodities that would be used for hedging diesel and gasoline to mitigate price volatility. These price hedge the vast majority of price risk. However, they are not a perfect hedge in that the retail prices paid by the county would be higher and should be accounted for when determining the County's overall cost to purchase these commodities.

Summary: The current low prices of gasoline and diesel make this an opportune time for the County to begin a hedging program for its fuel purchases. Using the approach described above the County's cost of diesel fuel would be effectively hedged at $2.01/gallon for fiscal year 2016 (plus the spread between the index and the County's retail price), at a hedging cost of $5.5 million. The County's cost of gasoline would be effectively hedged at $ 1.84/gallon for fiscal year 2016 (plus the spread between the index and the County's retail price) at a hedging cost of $17.9 million.

MDA recommends the County develop a hedging strategy, which should include the volume to be hedged, the type of hedging instruments the County will consider and the timing and frequency of hedging activities. In conjunction with this hedging strategy the County may also wish to develop its risk management policies to ensure adequate oversight and controls. As the County requested, MDA has provided a "strawman" risk management approach for consideration in the attached appendix.

Appendix

Risk Management Approach "Strawman"

Energy Risk Management Policy Overview

It is our understanding that the County has not utilized a hedging program for its diesel and gasoline purchases. It is also our understanding that the County has employed a hedging program for its natural gas commodity purchases but does not have a formal risk management policy in place for that program. The use of hedging or other financial and physical positions create additional risk of losses if not managed properly. A formal policy that sets forth the rules concerning the objective, delegation of authority, standards of conduct and risk management philosophy enables an organization to define its risk management culture and to minimize the risk inherent in the energy markets. The extent of the County's hedging program will dictate the amount of resources it should dedicate to risk management. Obviously a large hedging program could result in significant losses to the County and would require greater oversight. A smaller hedging program that does not expose the County to large losses would not require the same level of oversight. In either case, we recommend that the County develop a formal policies, control and procedures manual for energy risk management (the "Policy"). The document should contain information regarding the following matters, which are discussed in detail in the following pages:

- Risk management objective
- Risk management philosophy
- Organization and governance structure
- Standards of conduct and compliance training
- Reporting requirements and methodologies for valuing exposure

The purpose of the Policy is to formalize the process and the delegation of authority for energy and credit risk management. Some of these processes can include guidelines for managing risk of energy purchases and sales, the use of internal controls and approval procedures and limitations on hedging activities and instruments.

Risk Management Objective

The risk management objective should simply articulate the purpose for engaging in energy transactions and developing a risk management program. The objective may include a framework for establishing a risk management culture at the County and could reflect the goals and risk tolerance of the County.

Risk Management Philosophy

The Policy should clearly define the County's risk management philosophy and should at a minimum (1) identify the level of risk tolerance that the County will accept with respect to fuel price changes; (2) its tolerance to the size of open fuel positions; and (3) mitigation strategies to minimize the impact of the above exposures on fuel costs.

For example, the County's risk management philosophy may incorporate the following 3 core goals:

1. Mitigate risk through the use of hedging instruments to protect against adverse changes in fuel prices and minimize the risk of cost increases. Prohibit the use of speculative trading.

2. Improve cost and revenue effectiveness by reducing the County's net fuel costs.

3. Improve cost and revenue predictability through physical positions which should result in a higher predictability of the portfolio's behavior given fuel price fluctuations.

The risk management philosophy should provide the activities that the County will engage in to meet its objectives. These can include the approved types of hedging instruments and products and limitations on the use of hedging such as the proportion of the fuel volume that may be hedged.

Organization and Governance Structure

Delegation of Authority - The delegation of authority is a critical component of a risk management policy. It establishes the permissions granted to officials and administrative staff in making decisions and taking action on behalf of an organization. It also empowers managers to allocate resources efficiently while ensuring proper controls and oversight. Examples of activities that can be delegated include signing contracts and approving hedging products. We provide below our recommendations for the delegation of authority between the oversight bodies: Board of Supervisors, Energy Risk Management Committee, General Manager and Risk Manager. The County may not wish to utilize all of these layers of governance but we provide them for consideration.

Board of Supervisors - The Board of Supervisors is responsible for providing the oversight of and support for energy risk management philosophies and principals. The Board of Supervisors shall approve the initial risk management policy document to ensure that it is consistent with the overall philosophy and objective of the County. Ongoing responsibilities should include the periodic review of the risk management policy to ensure the adequacy of financial controls.

Energy Risk Management Committee - The Energy Risk Management Committee's (ERMC) primary function is to provide oversight to ensure that risk controls are adequate and that activities are in compliance with the Policy. The ERMC will approve material changes to this Policy Manual and meet no less than once per quarter to review compliance. The ERMC should include senior members of the County's Internal Services Department and Financial Services department. The ERMC should be comprised of at least 5 members.

General Manager - The General Manager, Office of Sustainability is responsible for directing all power and fuel purchase functions to ensure that adequate resources are available for County use. Given the General Manager's role in directing energy related operations, we recommend a separation of duties between establishing the strategy of the risk management program and

oversight. Thus, the responsibilities delegated to the General Manager as listed in the policy outline should be limited to the following with the balance of responsibilities allocated to a Risk Manager as described below.

The General Manager shall:

- Establish a risk management culture throughout the department;
- Set a clear strategy and goals for hedging market price risk;
- Establish the scope of energy portfolio and risk management activities, the purpose for engaging in transactions, and the appropriate risk tolerances;
- Establish the strategic direction and risk threshold for energy needs;
- Approve individuals authorized to commit the County to energy transactions;
- Periodically review the Policy with the Energy Risk Management Committee;

Risk Manager - The County could appoint a risk manager with responsibility for the daily administration and management of its risk management program. The risk manager may hold other duties within the County. The risk manager will report material issues to the ERMC and will be a member of the committee.

The Risk Manager shall:

- Periodically assess the adequacy and functioning of the system of controls over market, credit, and operational risks;
- Ensure that risk tolerances are consistent with strategic direction;
- Certify that all risk control activities (position monitoring, portfolio assessment, credit, etc.) are independent of energy purchases and sales;
- Establish the credit criteria for counterparties;
- Report to Agency and Board of Supervisors annually on the risk profile of the County's energy portfolio and on the results of risk management activities.

Administrative Functions - To ensure the independence, accountability and proper monitoring of functional trading and marketing activities, we recommend that the County follow industry best practices by separating essential functions into different organizations within the County. This structure intends to provide appropriate checks and balances as well as maintenance of data integrity, security, and accountability alignment.

Industry practice separates the duties between front, middle and back office functions. The functional divisions will be responsible for the day-to-day execution of transactions in accordance with approved risk management policies. These functions should report to the Risk Manager.

- The front office is typically responsible for the execution of an organization's risk taking and risk mitigation strategies. The front office functions can include deal execution – buying, selling and hedging of physical commodities and scheduling as well as tracking transactions. The County's front office personnel will include energy marketers, schedulers and real time traders or authorized agents. To minimize risk, we recommend

that the County authorize more than one individual to execute transactions with a limitation on the notional amount for which any individual may transact.

- The middle office is typically responsible for maintaining the overall control environment and assessing compliance with established risk policy. The middle office performs risk control, risk analysis and valuation of the portfolio. Middle office functions may also include assuring data integrity through deal validation and confirmations, analyzing and monitoring market and credit risk, validating price curves and reporting risk data to management, in compliance with policies authorized by the General Manager. The middle office's primary function should be to provide a significant level of control and policing of the front office's activities through independent oversight. The middle office function should be performed by a separate department/organizational function within the County that will report directly to the Risk Manager.

- The back office functions typically include transaction processing in support of the front office, such as invoicing, initial reconciliation, transactional analysis, dispute resolution, and reporting. The back office function should be performed by the finance department.

Standards of Conduct and Compliance Training - The standards of conduct should reflect the rules governing employee activity with respect to energy transactions. The standards of conduct may reference a broader standards codified in the County administrative manuals. The standards should list prohibited acts, required disclosures by individuals authorized to transact on behalf of the County, and the disciplinary action arising from the violation of the standards. In addition, the Risk Manager should conduct periodic training with front, middle and back office staff to review the procedures described in this Policy.

Reporting Requirements and Methodologies for Valuing Exposure - An integral part of risk management is the timely reporting of energy transaction activities utilizing industry standard methodologies for computing exposure. We recommend that the County require the following reports for monitoring of risk exposure and compliance:

- Record of transactions: a detailed listing of all hedges entered into showing: type of hedge, trade date, start date of hedge, exercise date of hedge, volume hedged by month, contract price of hedge by month, average price of hedge, premium and strike price of each hedge (if applicable);
- Mark-to-Market (MTM) analysis of its hedge portfolio;
- Value at risk analysis: a quantification of the potential dollar losses that the County could experience given its exposure;
- Transaction plan: anticipated forward transaction requirements for energy and fuels;
- Counterparty reporting: changes in counterparty credit risk and financial health.

The reports should be prepared each month by the back office and submitted to the Risk Manager. The Risk Manager will, in turn, utilize these reports to monitor compliance and exposure to losses. The monthly reports will be aggregated into a quarterly report that is provided to the ERMC for its periodic review.